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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.
09/374,344	08/13/99	HAYAKAWA	M 628365009012

JONES DAY REAVIS & POGUE
901 LAKESIDE AVENUE
CLEVELAND OH 44114

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EXAMINER

PADGETT, M

ART UNIT

PAPER NUMBER

1762

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Please find below and/or attached an Office communication concerning this application or proceeding.

Commissioner of Patents and Trademarks

Office Action Summary

Application No.

09/374,344

Applicant(s)

Haya Kawa et al

Examiner

M.L. Padgett

Group Art Unit

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—The MAILING DATE of this communication appears on the cover sheet beneath the correspondence address—

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, such period shall, by default, expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).

Status

- ☒ Responsive to communication(s) filed on 11/13/00 & 10/16/00.
- ☒ This action is **FINAL**.
- ☐ Since this application is in condition for allowance except for formal matters, **prosecution as to the merits is closed** in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11; 453 O.G. 213.

Disposition of Claims

- ☒ Claim(s) 301 - 323 is/are pending in the application.
- Of the above claim(s) _____ is/are withdrawn from consideration.
- ☐ Claim(s) _____ is/are allowed.
- ☒ Claim(s) 301 - 323 is/are rejected.
- ☐ Claim(s) _____ is/are objected to.
- ☐ Claim(s) _____ are subject to restriction or election requirement.

Application Papers

- ☐ See the attached Notice of Draftsperson's Patent Drawing Review, PTO-948.
- ☐ The proposed drawing correction, filed on _____ is ☐ approved ☐ disapproved.
- ☐ The drawing(s) filed on _____ is/are objected to by the Examiner.
- ☐ The specification is objected to by the Examiner.
- ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. § 119 (a)-(d)

- ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d).
- ☐ All ☐ Some* ☐ None of the CERTIFIED copies of the priority documents have been
- ☐ received.
- ☐ received in Application No. (Series Code/Serial Number) _____.
- ☐ received in this national stage application from the International Bureau (PCT Rule 17.2(a)).

*Certified copies not received: _____.

Attachment(s)

- ☒ Information Disclosure Statement(s), PTO-1449, Paper No(s). 10
- ☐ Interview Summary, PTO-413
- ☐ Notice of Reference(s) Cited, PTO-892
- ☐ Notice of Informal Patent Application, PTO-152
- ☐ Notice of Draftsperson's Patent Drawing Review, PTO-948
- ☐ Other _____

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(1)

DETAILED ACTION

Claims 301-323 rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

In the preambles of claims 301 and 312, "the surface" lacks proper antecedent basis, while in lines 3 "a composite" use the wrong article for a limitation that was previously introduced in line 1.

In claims 302, 303, 304, and 313-316, "photexcitation" lacks a correct article for a noun that was introduced in the independent claims, while "the contact angle" which is not an immutable quality, lacks proper antecedent basis.

In claims 308 and 320, it is unclear how one causes the photocatalytic surface layer to react to become hydrophilic, when it is required to be covered with a "protective coating", hence how contact with humidity or water ^{can} have any effect when there is the protective layers between any moisture and the ^{catalytic} photolytic surface. Clarification is needed.

(2) The nonstatutory double patenting rejection is based on a judicially created doctrine grounded in public policy (a policy reflected in the statute) so as to prevent the unjustified or improper time wise extension of the "right to exclude" granted by a patent and to prevent possible harassment by multiple assignees. See *In re Goodman*, 11 F.3d 1046, 29 USPQ2d 2010 (Fed. Cir. 1993); *In re Longi*, 759 F.2d 887, 225 USPQ 645 (Fed. Cir. 1985); *In re Van Ornum*, 686 F.2d 937, 214 USPQ 761 (CCPA 1982); *In re Vogel*, 422 F.2d 438, 164 USPQ 619 (CCPA 1970); and, *In re Thorington*, 418 F.2d 528, 163 USPQ 644 (CCPA 1969).

A timely filed terminal disclaimer in compliance with 37 CFR 1.321(c) may be used to overcome an actual or provisional rejection based on a nonstatutory double patenting ground provided the conflicting application or patent is shown to be commonly owned with this application. See 37 CFR 1.130(b).

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Effective January 1, 1994, a registered attorney or agent of record may sign a terminal disclaimer. A terminal disclaimer signed by the assignee must fully comply with 37 CFR 3.73(b).

- ③ Claims 301-323 are rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over claims ⁵⁴⁻58, ⁹¹⁻⁹⁹64-68, 71-72, and 102-131 of U.S. Patent No. 6,013,372. Although the conflicting claims are not identical, they are not patentably distinct from each other because while wording of the claims are not identical. The patented claims contained limitation not included in the original application claim, such as ranges of contact angle with water, however such limitations have been added by amendment, with all the concepts of the present claims embodied in these patented claims. Patent Claim 24 explicitly sets forth the absorption of H₂O due to photocatalytic excitation, however all the process claims involve the ~~photocatalyst, photo activation and some sort of contact with water, that inherently involve the~~ photocatalyst, photoactivation and some sort of contact with water, that inherently involves its adsorption on the treated surface, so the differences between the patent claims and independent claims 301 and 302 are only obvious variations, hence it would have been obvious to one of ordinary skill in the art to generalize from the patent claims, as to the process being employed, to thus determine that generically water is being absorbed. Note that while applicants' new independent claims include silicon or silicone in the photocatalyst layer, the patent claims 58, 64-68, 71-72, 97-98, 100, etc., ^{use}and these materials as now claimed. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:
- ④

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A person shall be entitled to a patent unless --

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

(e) the invention was described in a patent granted on an application for patent by another filed in the United States before the invention thereof by the applicant for patent, or on an international application by another who has fulfilled the requirements of paragraphs (1), (2), and (4) of section 371(c) of this title before the invention thereof by the applicant for patent.

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

(5) Claims 301, 305-306, 307, 312 and 317-318 are rejected under 35 U.S.C. 102(b) as being clearly anticipated by Field et al.

In Field et al, see the abstract, col. 1, lines 62-73, col. 2, lines 18-54; col. 3, lines 10-col. 4, lines 22 and especially col. 4, line 6 4-col. 5, line 55; etc. In the abstract, note that the film forming depression includes zinc oxide as the photoconductive material, a sensitization enhancing agent, such as a copper salt, and materials such as silicone, suitable substrates including glass are discussed in col. 2, while col. 3, lists oxides of Zn, Ti, Sn and Bi as sensitive material, group I or IV (B) metals ^{as} enhancing, and col. 4 silicone resins. Field et al teaches use of UV (col. 5, line 43-55 and col. 6, lines 13-39) including exposures of 10-1000 ergs/cm², *Aqueous* development via process^{es} that will be done in open air (air has humidity) are disclosed col. 5, lines 5-17 and col. 7+.

Claims 302-304, 308, 310-311, 313-316 and 320-311 are rejected under 35

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U.S.C. 103(a) as being unpatentable over Field et al ~~alone~~, or in view of Hiroshi Okaniwa et al (translation).

While Field et al teach making the surface hydrophilic, thus inherently effecting the ~~coat~~^{contact} angle with water so that the angles are small, no values therefore are disclosed, however as the requirement/teaching is for the surface to be able to tenaciously ~~absorb~~^{absorb} water after exposure and to enable image development due to hydrophobic and hydrophilic areas one of ordinary skill in the art would have used composition in the process expected to produce contact angles as claimed.

Fields teaches use of US light, but gives ~~exposure~~^{exposure} ranges in units of total energy employed, not intensity as claimed, so exact comparison of these parameters is not possible with the information provided, however it would have been ~~discussed~~^{obvious} to one of ordinary skill in the art to use a combination of times and ~~intensity~~^{intensities} to produce the taught ~~exposures~~^{exposures}, whose shorter times (i.e. second to a few mixtures) would have been obvious for the economic advantages, hence would consequently have involved intensities as claimed.

It is further noticed, that surfaces that have been ~~urged~~^{imaged printed} or ~~punctured~~, and are expected to be used in high wear situations, are conventionally ~~contact~~^{coated} with protective layers, hence to do so for such and uses would have been obvious, especially as ~~taugh~~ substrates such as glass are frequently used in such situations including as windows on buildings or cars. Notice is also taken that the use of barriers layers an inexpensive glass, such as soda lime glass, is a conventional practice to prevent in diffusion ~~therefore~~ from contaminating layers deposited on the glass, hence use of such barrier coatings would have been obvious for their standard purpose.

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Alternately, Hiroshi et al who also teach use of a photocatalytic metal oxide layer that is made hydrophilic with exposure to UV, are supportive of the above assertions concerning contact angles (see table 1 and 2 on page 5 and 7), as well as ranges of useful UV intensity and times (page 3, line 12-20; page 4, lines 13-17 and tables), hence showing the further obviousness of the values claimed, due to the expected effectiveness of the parameters, and the expected results for the materials used.

In Hiroshi Okaniwa et al, the claim (p. 1); page 3, lines 1-7, 12-37; examples 1 and 2, particularly tables 1, 3, and 4, lines 13-18, plus p. 6 last paragraph, where the decrease in contact angle of water for the exposed areas, shows that the irradiation causes water molecules to be physically absorbed, including at angles of less than 20° and angles of 30° , which is ^{inclusive of} almost 0° .

(7) Claims 307, 319 and 322 are rejected under 35 U.S.C. 103(a) as being unpatentable over Field et al as applied to claim's 301-306, 308-318 and 320-323 above, and further in view of Ogawa et al (EPO-590,477).

Field et al teaches the use of metals to enhance the sensitivity of the photocatalyst, teaching Cu, Bi, Cr, Ag, group I or IV metals, but does not indicate that Pt, Pd, Rh, Ru, Os or Ir are suitable for this purpose, however Ogawa et al (EPO-477), who is also teaching use of photocatalytic metal oxide of the same types as Field et al (ie, TiO_2 , etc.), indicate that Pt (abstract) is also effective for improving photocatalytic activity. Col. 16, line 41 to col. 17, line 19 indicates that Pt, Pd, Ag and Ni all have equivalent use for the purpose taught in Field et al.

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Therefore it would have been obvious to one of ordinary skill in the art to use metals, such as Pt or Pd (group VIII metals), as the sensitivity enhancing metal in Fields due to their demonstrated ^{equivalence} sequences and expected effectiveness

Hiroshi et al also supports the above asserted obviousness of uses on windows, i.e. architectural glass (abstract; col. 5-6), as well as showing usefulness on other claimed surfaces such as tiles. Hiroshi has more discussion on possible UV or sunlight sources.

(8) Claims 301, 305-307, 309, 312 and 317-319 are rejected under 35 U.S.C. 102(e) as being clearly anticipated by Murasawa et al (823).

In Murasawa et al, see the abstract; col. 3 lines 1-26 and 50-col. 4, line 27+ and 59-col. 5, lines 18 and 30-40; examples 3 and 4 and col. 8, lines 56-67 etc.

Note that 103 obvious arguments as applied ^{above} ~~to~~ could, also be applied to Murasawa et al (823), but are redundant

(9) Claims 301, 305-307, 309, 312, 317-319 and 322 are rejected under 35 U.S.C. 102(e) as being clearly anticipated by Heller et al.

In Heller et al (5,616,532), see the abstract; col. 3, lines 1-54, esp. 36-47; col. 5-6, esp. col. 5, lines 56-60, and col. 6, lines 20-29; col. 7, lines 30-47; col. 8, lines 35-68+; col. 9, lines 13-25+; col. 11, lines 50-col. 12, line 45+, and col. 13, lines 7-59. Again 103 arguments as given above are applicable.

(10) Other references from the IDS having teaching equivalent to those applied above include Japanese abstracts to Akugama et al; Murasawa et al (408A); Koura et al; Horiuchi et al;

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Hitachi LTD, Shoji Yokoishi and Kuma¹ Hiroshi et al; as well as the EPO patent to Yamazachi et al and USPN to Kawashiman et al (465).

(11) Applicant's arguments filed 10/16/00 and discussed above have been fully considered but they are not persuasive.

(12) Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

(13) Any inquiry concerning this communication should be directed to M.L. Padgett at telephone number (703) 2336 on Monday-Friday from about 8 a.m. - 4:30 p.m; and FAX (703) 305-3599 (official) or 305-6078 (unofficial) .

Padgett/dh

January 16, 2001



MARIANNE PADGETT
PRIMARY EXAMINER
GROUP 1700